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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,702	05/03/2005	Harold A Goldsberry III	CH-756/MD02-94	7830
23413 7590 04/19/2010 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER CORDRAY, DENNIS R				
ART UNIT		PAPER NUMBER		
1791				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/533,702

Applicant(s)

GOLDSBERRY ET AL.

Examiner

DENNIS CORDRAY

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16 and 35-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41 and 42 is/are allowed.
- 6) ☒ Claim(s) 16, 35-59 and 43-45 is/are rejected.
- 7) ☒ Claim(s) 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's amendments and arguments filed 3/31/2010 have overcome the outstanding rejections over the cited prior art. The primary references used, Conner et al, Duplaise et al, Pandian et al and Tsai et al, fail for reasons given in the remarks.

All outstanding rejections are withdrawn. However, upon further consideration, new grounds of rejection are made as detailed herein.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16, 37, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallstrom (US 6165259) in view of Maher (4769081).

Claims 16, 37 and 43: Hallstrom et al discloses a process for making a sizing composition comprising:

Dispersing a hydrophobic material, such as a ketene dimer or an alkenyl succinic anhydride (ASA), in an aqueous phase by means of a coacervate dispersant comprising an anionic compound and a cationic compound, which are bound together by electrostatic attraction (Abs; col 2, lines 49-54; col 3, lines 3-5 and 36-59). The anionic compound is, in some embodiments, an anionic starch (col 4, lines 15-19). The anionic compound can be present in an amount up to 100%, preferably from 1 to 10%, by

weight of the ASA (col 6, lines 13-22). The dispersions can be made by mixing an aqueous phase with the dispersant system and the ASA and homogenizing the mixture to obtain an aqueous emulsion (col 6, lines 45-47). The dispersant system contains an anionic starch and reads on the claimed first starch component.

Hallstrom et al discloses that chemicals conventionally added to stock in papermaking can be used with the sizing dispersions (col 8, lines 58-62). Particularly good sizing can be obtained using the dispersions with a retention agent, such as a cationic starch (second starch component). The size dispersion can be mixed with the retention aid prior to introducing the mixture to the stock (col 9, lines 4-8 and 20-24).

The composition is intended for sizing, thus the ratio of starch:ASA is sufficiently high to enable the composition to impart useful sizing properties to the paper or, at least, such ratio and sizing properties would have been obvious to one of ordinary skill in the art.

Hallstrom et al does not disclose that the first starch component is modified or the starch species. Hallstrom et al does disclose that the anionic compound is preferably water soluble (col 4, lines 1-3).

Maher teaches that starches (corn starch, potato starch, wheat starch, tapioca starch, etc.), unmodified or chemically modified by known methods (esterification, etherification, oxidation, etc.), that are used in food and industrial applications are often dispersed or dissolved in an aqueous medium. Non-gelatinized, cold-water insoluble, granular starches used in such applications are typically dispersed in an aqueous

medium and cooked (heat treated) to gelatinize and solubilize the granular starch material (col 1, lines 23-33; col 2, lines 27-33).

The art of Hallstrom et al, Maher and the instant invention is analogous as pertaining to the use of aqueous compositions of starches. It would have been obvious to one of ordinary skill in the art use a cooked starch, such as corn, wheat, potato or tapioca starch, in the process of Hallstrom et al in view of Maher as a typical procedure known in the art to make the starch water soluble. The claimed starch species would have been obvious as well known starches used in industrial applications.

Claim 45: Maher discloses that a dry starch product that is readily dispersed in water in an amount of 3 parts per 100 parts by weight cold water (col 5, lines 38-44). One of ordinary skill in the art would take guidance from Maher and make a starch composition having the disclosed composition.

Claims 16, 37 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rasheed et al (US 2005/0124704) in view of Pardikes (US 5653915).

Rasheed et al discloses a process for making a sizing composition comprising emulsifying an ASA size with a water soluble, anionic starch stabilizer. The anionic ASA emulsion comprises an amount of anionic starch from 0.1 to 30 parts by weight per 1 part ASA. The starch may be chemically treated to increase its content of carboxylate groups (reads on acid modified). Oxidized starch is particularly preferred. The anionic starches may be cooked (heat treated) to make them soluble (Abs; p 4, pars 45, 49; pp

4-5, par 56; p 5, pars 57, 58, 61 and 67). In an example, the anionic starch was supplied in a 2% concentration (p 8, pars 105-106).

The composition is intended for sizing, thus the ratio of starch:ASA is sufficiently high to enable the composition to impart useful sizing properties to the paper or, at least, such ratio and sizing properties would have been obvious to one of ordinary skill in the art.

Rasheed et al does not disclose forming the emulsion using a first starch component, then combining the emulsion with a second starch component.

Pardikes teaches that the commercial preparation of an ASA emulsion for sizing paper involves emulsifying water, starch (first starch component), ASA and a surfactant under a high degree of shear in a ratio of starch:ASA of approximately 8:1, then further diluting downstream with additional starch addition (second starch component) to a ratio of approximately 30:1 (col 2, line 43 to col 3, line 7). Pardikes discloses a variation of the method of forming the starch/ASA emulsion and of further mixing in a second starch component that provides a particle size in the sub-micron range, improves on the sensitivity of the process to emulsifier flow rate variation and viscosity change, and does not subject the emulsifier to a damaging high pressure drop. The disclosed method still comprises forming an emulsion having a ratio of starch:ASA of approximately 8:1, then further diluting downstream with additional starch addition to a ratio of approximately 30:1 (Abs; col 1, lines 4-22; col 6, line 7 to col 7, line 11, Fig. 1).

The art of Rasheed et al, Pardikes and the instant invention is analogous as pertaining to making sizing compositions for paper. It would have been obvious to one

of ordinary skill in the art to emulsify a first starch component and ASA in a ratio of approximately 8:1, then further diluting downstream with additional starch addition to a ratio of approximately 30:1 in the process of Rasheed et al in view of Pardikes to obtain the advantages disclosed by Pardikes.

Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallstrom in view of Rasheed et al.

The disclosure of Hallstrom et al is used as above. Hallstrom et al does not disclose oxidized, acid modified or heat treated starch.

The disclosure of Rasheed et al is used as above.

The art of Hallstrom et al, Rasheed et al and the instant invention is analogous as pertaining to making sizing compositions for paper. Absent convincing evidence of unexpected results commensurate in scope with the claims, it would have been obvious to use an oxidized or acid treated starch as the anionic compound in the process of Hallstrom in view of Rasheed et al as a functionally equivalent anionic starch known for emulsifying ASA and to have a reasonable expectation of success. Cooking the starch would have been an obvious heat treatment to make it soluble.

Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallstrom in view of Tsai et al (US 5595631).

The disclosure of Hallstrom et al is used as above. Hallstrom et al does not disclose oxidized, acid modified or heat treated starch. Hallstrom et al does disclose

that cationic starch is a suitable cationic compound in the coacervate dispersant (col 5, lines 32-36).

Tsai et al discloses a method of making a paper sizing composition comprising emulsifying water, ASA and a cationic non-degraded starch (first starch component). Suitable starches are potato starch, corn starch, wheat starch, tapioca starch, etc. (Abs; col 2, lines 23-43; col 3, lines 16-42; col 4, lines 21-53; col 5, line 57 to col 6, line 4; col 7, line 61 to col 8, line 16).

The art of Hallstrom et al, Tsai et al and the instant invention is analogous as pertaining to making sizing compositions for paper. Absent convincing evidence of unexpected results commensurate in scope with the claims, it would have been obvious to use an acetylated or hydroxyethylated starch for the cationic compound in the process of Hallstrom in view of Tsai et al as a known emulsifier for ASA and to have a reasonable expectation of success.

Allowable Subject Matter

Claims 41 and 42 are allowable over the cited prior art.

The prior art teaches both high and low pressure emulsification of starch/ASA mixtures. The prior art fails to disclose the claimed inlet and outlet temperatures for the emulsification. Duplaise et al discloses the claimed pressures in Examples 4-5 (col 9), but fails to disclose the temperature. Example 15 (col 13) discloses a temperature for the emulsification (80-110 °F) that is significantly lower than the claimed range. Pardikes discloses much higher pressures than the claimed range. Mazzarella et al

(4040900) teaches that temperatures higher than room temperature are to be avoided when emulsifying ASA due to hydrolysis of the anhydride (col 5, lines 61-65). One of ordinary skill in the art would not find it obvious to use the claimed temperature and pressure range.

Claim 40 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The cited prior art teaches synthetic or natural nonionic polymers emulsifiers or stabilizers for ASA (see for instance, Dilts et al, US 2003/0205167, p 9, par 77) but fails to teach a nonionic oxidized starch. From the prior art cited in this and previous rejections, using a nonionic oxidized starch in the process as currently claimed would not have been obvious to one of ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
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Examiner, Art Unit 1791